

Circles made by the outmost red and outmost violet in the 13th Observation of the first part of this Book.

O B S. VI.

Placing my Eye where these Rings appeared plainest, I saw the Speculum tinged all over with waves of Colours (red, yellow, green, blue ;) like those which in the Observations of the first Part of this Book appeared between the Object-Glasses and upon Bubbles of Water, but much larger. And after the manner of those, they were of various magnitudes in various positions of the Eye, swelling and shrinking as I moved my Eye this way and that way. They were formed like Arcs of concentrick Circles as those were, and when my Eye was over against the center of the concavity of the Speculum (that is, 5 Feet and 10 Inches distance from the Speculum) their common center was in a right Line with that center of concavity, and with the Hole in the Window. But in other postures of my Eye their center had other positions. They appeared by the Light of the Clouds propagated to the Speculum through the Hole in the Window, and when the Sun shone through that Hole upon the Speculum, his Light upon it was of the Colour of the Ring whereon it fell, but by its splendor obscured the Rings made by the Light of the Clouds, unless when the Speculum was removed to a great distance from the Window, so that his Light upon it might be broad and faint. By varying the position of my Eye, and moving it nearer to or farther from the direct beam of the Sun's Light, the Colour of the Sun's reflected Light constantly varied upon the Speculum,
as

as it did upon my Eye, the same Colour always appearing to a By-stander upon my Eye which to me appeared upon the Speculum. And thence I knew that the Rings of Colours upon the Chart were made by these reflected Colours propagated thither from the Speculum in several Angles, and that their production depended not upon the termination of Light and Shadow.

O B S. VII.

By the Analogy of all these Phænomena with those of the like Rings of Colours described in the first Part of this Book, it seemed to me that these Colours were produced by this thick plate of Glass, much after the manner that those were produced by very thin plates. For, upon tryal, I found that if the Quick-silver were rubbed off from the back-side of the Speculum, the Glass alone would cause the same Rings of Colours, but much more faint than before ; and therefore the Phænomenon depends not upon the Quick-silver, unless so far as the Quick-silver by the increasing the reflexion of the back-side of the Glass increases the Light of the Rings of Colours. I found also that a Speculum of metal without Glass made some years since for optical uses, and very well wrought, produced none of those Rings ; and thence I understood that these Rings arise not from one specular surface alone, but depend upon the two surfaces of the plate of Glass whereof the Speculum was made, and upon the thickness of the Glass between them. For as in the 7th and 19th Observations of the first Part of this Book a thin plate
of